

REMARKS

Reconsideration of the present application is respectfully requested. Claims 1, 3-4, 6-10, 12, 14-17, and 19-20 were pending. Claims 1, 3, 6, 10, 17, and 20 have been amended. New claims 21-23 have been added. Claims 9 and 16 have been canceled without prejudice. Claims 1, 3-4, 6-8, 10, 12, 14-15, 17, and 19-23 remain pending.

35 U.S.C. § 103(a) Rejections

Claims 1, 3, 4, 6-10, 12, and 14-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yanai et al. (US 6,502,205) in view of Courts et al. (US 5,636,360). Applicants respectfully traverse the rejection.

Claim 1 as amended includes a limitation of:

when the first portion of the non-volatile storage device in the **first** storage server is full, applying the data access request to a volume managed by the first storage server and **causing the second storage server to apply the data access request to an image volume of the volume.**

(Claim 1 as amended; emphasis added)

As admitted in the Office Action, Yanai does not disclose “when the first portion of the non-volatile storage device in the first storage server is full, causing the second storage server to transfer the data access request from the memory on the second storage server to a file corresponding to the first storage server on the second storage server.” (Office Action, p. 3, third paragraph) The Office Action alleged that Courts teaches a method of copying the contents of a **log buffer** to a log partition **when the log buffer is full** (Office Action, p. 3, fourth paragraph). Assuming *arguendo* that Courts disclosed such a method, copying the contents of **a log buffer** to a log partition

when ***the log buffer is full*** is different from ***causing the second storage server to apply the data access request to an image volume of the volume*** when the first portion of the non-volatile storage device in the ***first storage server*** is full. Thus, neither Yanai nor Courts, alone or in combination, discloses the limitation set forth above.

The Office Action further argued that it would have been obvious to one having an ordinary skill in the art at the time of the invention “to realize that the cache or log buffer in the primary storage system and the secondary storage system are carrying a ***ripple effect***.” (Office Action, p. 3) However, the Office Action did not state where the alleged ripple effect is taught in either reference. The Office Action merely argued that:

Such ripple effect in the storage system is that once the cache/buffer in the primary storage system is full, the data then transferred to another storage device within the primary storage system. The data in the primary storage device and the secondary storage device has to be mirrored with each other before the data has to be transferred to the secondary storage system as being taught above. ***Once the cache/buffer in the secondary storage system is full*** during the period of receiving the data access request from the primary storage system, ***the cache/buffer*** has to transfer the data to another storage device within the secondary storage system.

(Office Action, pp. 3-4; emphasis added)

By arguing that it would have been obvious to one having an ordinary skill in the art at the time of the invention “to ***realize*** that the cache or log buffer in the primary storage system and the secondary storage system are carrying a ***ripple effect***,” the

Examiner is relying on facts which are not of record as common knowledge to arrive at the claim limitation noted above. Applicants respectfully demand the Examiner to provide evidentiary support of such under MPEP 2144.03(c). Without such evidentiary support, claim 1 as amended is patentable over Yanai and Courts. Withdrawal of the rejection is respectfully requested. .

For the reason discussed above with respect to claim 1, claim 10 is patentable over Yanai in view of Courts. Moreover, claims 3, 4, 6-9, 12, and 14-16 depend, directly or indirectly, from claims 1 and 10, respectively. Thus, having additional limitations, claims 3, 4, 6-9, 12, and 14-16 are patentable over Yanai in view of Courts. Withdrawal of the rejection is respectfully requested.

Claims 17 and 19-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yanai et al. (US 6,502,205) in view of McMillan Jr. (US 5,587,390), and further in view of Achiwa et al. (US patent publication 2004/0153719). Applicants respectfully traverse the rejection.

Claim 17 as amended sets forth:

applying the data access request to an image of a volume in response to a specified signal from the first source filer indicating that the first portion of the first memory is full, wherein the volume is maintained by the first source filer and the image is maintained by the destination filer;

(Claim 17 as amended; emphasis added)

In contrast, none of Yanai, McMillan, Achiwa, alone or in combination, teaches the above limitation. For the reason discussed above with respect to claim 1, Yanai does not teach the above limitation.

As to McMillan, the reference discloses that a request is removed from a STI staging queue when the acknowledgement is transferred from the specified disk to the STI module (McMillan, col. 5, ln.35-38). Like Yanai, McMillan does not teach the limitation of claim 17 set forth above.

Regarding Achiwa, the reference discloses a data storage system having multiple storage apparatuses interconnected to each other (Achiwa, paragraph [0009]). Achiwa does not teach the limitation of claim 17 set forth above.

Since none of Yanai, McMillan, Achiwa, alone or in combination, teaches every limitation set forth in claim 17 as amended, claim 17 is patentable over Yanai in view of McMillan and Achiwa. Withdrawal of the rejection is respectfully requested.

Claims 19-20 depend directly from claim 17. Thus, having additional limitations, claims 19-20 are patentable over Yanai in view of McMillan and Achiwa. Withdrawal of the rejection is respectfully requested.

New claims 21-23 have been added without introducing any new matter. Claim 21 sets forth:

operating the destination storage server to store the write requests
temporarily prior to synchronizing the mirror volumes with the source
volumes, including

...

using the destination storage server to maintain a plurality of ***files***
in the non-volatile mass storage subsystem, ***each said file corresponding to a
separate one of the plurality of source storage servers***; ...

(Claim 21)

In contrast, none of the cited reference discloses or teaches the above limitation. Yanai merely discloses asynchronous mirroring of data in one storage device onto another storage device (Yanai, Figure 1; abstract). Courts discloses copying the contents of a log buffer to a log partition when the log buffer is full (Courts, col. 2, ln. 35-37). As to McMillan, the reference discloses that a request is removed from a STI staging queue when the acknowledgement is transferred from the specified disk to the STI module (McMillan, col. 5, ln.35-38). Regarding Achiwa, the reference discloses a data storage system having multiple storage apparatuses interconnected to each other (Achiwa, paragraph [0009]). As such, none of the references cited discloses or teaches the limitation of new claim 21 set forth above. It is respectfully submitted that new claim 21 is novel and patentable over the references cited. Further, claims 22-23 depend from claim 21, and thus, are novel and patentable over the references cited for the reason discussed above with respect to claim 21. Allowance of claims 21-23 is earnestly solicited.

Conclusion

For at least the foregoing reasons, the present application is believed to be in condition for allowance, and such action is earnestly solicited.


If the Examiner perceives any further obstacle to allowing the present application, he is invited to contact the undersigned at (408) 720-8300.

Pursuant to 37 C.F.R. 1.136(a)(3), Applicant hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

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